I Claim:

1. A non-invasive blood glucose monitoring system, comprising:

mounting one sensor adjacent to the tragus region of the ear of a human diabetic patient and one sensor adjacent to the anthelix region of the ear of a human diabetic:

obtaining a value of a fasting blood glucose measurement;

obtaining a value of an Hb1Ac measurement;

multiplying the value of the fasting blood glucose by the value of the HbA1c measurement to get a product;

taking the square root obtained from the product of the fasting blood glucose multiplied by the HbA1c and using this value as the base line glucose reference level;

measuring the temperature of the tragus region of the ear using the adjacent sensor;

measuring the temperature of the anthelix region of the ear using the adjacent sensor;

determining the temperature differential between the tragus and anthelix with respect to the base line glucose reference glucose so that if the temperature differential subsequently decreases then the person's blood glucose has increased by 1 mg/dl per approximately .024 C and if the temperature differential subsequently increases then the person's blood glucose has decreased by 1 mg/dl per approximately .024 C;

2. The system of claim 1 wherein the sensors are accurate to ± .035 K.

3. The system of claim 2 wherein sampling the temperature of the anthelix region and the tragus region of the ear is done multiple times per minute by the adjacent sensor, resulting in essentially continuous monitoring.

4. The system of claim 3 wherein the temperature data is transmitted to an adjacently mounted microprocessor for analysis and readable output so that the diabetic patient can continuously monitor blood glucose levels.

5. A process for measuring the blood glucose level in a person by using differential ear temperatures, comprising the steps of:

(a.) establishing a base line glucose reference level by

(i.) testing a blood sample from the person taken after fasting to determine the fasting glucose level;

(ii.) testing the same blood sample to determine the HbAlc level, as a percentage, and converting it to the same unit of measurement as the fasting glucose level;

(iii.) multiplying the fasting glucose level by the HbA1c level to obtain a product;

(iv.) taking the square root of the said product to determine a base line glucose reference level for the person;

(b.) establishing a base line temperature differential for the person, at substantially the same time as the blood sample from the previous step has been drawn, by:

(i.) applying an external sensor at the tragus of the person's ear and obtaining a temperature measurement;

(ii.) applying an external sensor at the anthelix of the person's ear and obtaining a temperature measurement;

(iii.) calculating the temperature differential between the tragus temperature and the anthelix temperature to obtain a base line temperature differential;

(c.) at subsequent times, measuring the instant temperature differential at the tragus and anthelix of the person's ear by sensors in the same manner as set forth in step (b) above;

(d.) calculating the difference between the instant temperature differential and the base line temperature differential and dividing the result by a predetermined conversion factor to arrive at a glucose change amount;

(e.) adding the glucose change amount to the base line glucose reference level if the instant temperature differential is less than the base line temperature differential, or subtracting the glucose change amount from the base line glucose reference level if the instant temperature differential is greater than the base line temperature differential, to obtain the instant blood glucose level.

6. The process of claim 5 wherein the conversion factor is approximately .024.

7. The process of claim 6 wherein two external sensors are used, one applied to the tragus and one applied to the anthelix so that the respective temperature measurements can be simultaneously.

8. The process of claim 7 wherein the sensors are accurate to ± .035 K.

9. The process of claim 8 wherein the sensors are either thermistors or platinum wires.

10. The process of claim 9 wherein the temperature measurements are taken multiple times per minute resulting in essentially continuous monitoring.

11. The process of claim 10 wherein the instant temperature differential and instant blood glucose level is transmitted to, via wire or wirelessly, and stored within a microprocessor and made available for display and averaging or other manipulation.

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